

PATENT COOPERATION TREATY

PCT

REC'D 05 AUG 2005


WIPO

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference FNTYA021WO	FOR FURTHER ACTION	See Form PCT/PEA/416
International application No. PCT/JP2004/008694	International filing date (day/month/year) 15.06.2004	Priority date (day/month/year) 22.07.2003
International Patent Classification (IPC) or national classification and IPC B60K6/04		
Applicant TOYOTA JIDOSHA KABUSHIKI KAISHA et al.		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 8 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>		
Date of submission of the demand 21.12.2004	Date of completion of this report 03.08.2005	
Name and mailing address of the International preliminary examining authority:  European Patent Office - Gitschiner Str. 103 D-10958 Berlin Tel. +49 30 25901 - 0 Fax: +49 30 25901 - 840	Authorized Officer Wisnicki, M Telephone No. +49 30 25901-538	



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/JP2004/008694

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-35 as originally filed

Claims, Numbers

1-18 as originally filed

Drawings, Sheets

1/10-10/10 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/JP2004/008694

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	3, 4, 6, 7, 10, 11, 13, 14
	No: Claims	1, 2, 5, 8, 9, 12, 15-18
Inventive step (IS)	Yes: Claims	4, 11
	No: Claims	1-3, 5-10, 12-18
Industrial applicability (IA)	Yes: Claims	1-18
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

1 The following documents are referred to in this communication:

D1 : EP-A-0 903 259

D2: EP-A-1 092 581

2 INDEPENDENT CLAIMS

2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1, 5, 8, 12, 15 and 17 is not new in the sense of Article 33(2) PCT.

2.2 With regard to claim 1 document D1 discloses:

A power output apparatus that outputs power to a drive shaft, said power output apparatus comprising:

an internal combustion engine;

an electric power-mechanical power input-output module that is linked with an output shaft of said internal combustion engine and with said drive shaft and outputs at least part of power from said internal combustion engine to said drive shaft through inputs and outputs of electric power and mechanical power;

a motor that is capable of inputting and outputting power from and to said drive shaft;

an accumulator that is capable of supplying and receiving electric power to and from said electric power-mechanical power input-output module and said motor;

a power demand setting module that sets a power demand required to said drive shaft, in response to an operator's manipulation;

a target power setting module that sets a target power to be output from said internal combustion engine, based on the setting of the power demand;

a drive restriction effectuation module that, when a predetermined restricting condition is fulfilled, effects a drive restriction of said motor based on the predetermined restriction condition;

a correction module that corrects the setting of the target power based on the effected drive restriction, when the drive restriction of said motor is effected by said drive

restriction effectuation module; and
a control module that executes normal control of controlling said internal combustion engine, said electric power-mechanical power input-output module, and said motor in the case of no effectuation of the drive restriction of said motor by said drive restriction effectuation module to ensure output of the target power from said internal combustion engine and output of a power corresponding to the setting of the power demand to said drive shaft, said control module executing restriction control of controlling said internal combustion engine, said electric power-mechanical power input-output module, and said motor in the case of effectuation of the drive restriction of said motor by said drive restriction effectuation module to ensure output of the corrected target power from said internal combustion engine and output of a power in a range of the effected drive restriction from said motor.

The subject-matter of claim 1 is therefor not new (Article 33(2) PCT).

2.3 With regard to claim 5 document D1 further discloses:

A power output apparatus that outputs power to a drive shaft, said power output apparatus comprising:
an internal combustion engine;
an electric power-mechanical power input-output module that is linked with an output shaft of said internal combustion engine and with said drive shaft and outputs at least part of power from said internal combustion engine to said drive shaft through inputs and outputs of electric power and mechanical power;
a motor that is capable of inputting and outputting power from and to said drive shaft;
an accumulator that is capable of supplying and receiving electric power to and from said electric power-mechanical power input-output module and said motor; and
a control module that sets a power demand required to said drive shaft in response to an operator's manipulation and sets a target power to be output from said internal combustion engine based on the setting of the power demand, said control module controlling said internal combustion engine, said electric power-mechanical power input-output module, and said motor in the case of no fulfilment of a predetermined restricting condition to ensure output of the target power from said internal combustion engine and output of a power corresponding to the power demand to said drive shaft, in the case of

fulfilment of the predetermined restricting condition, said control module effecting a drive restriction of said motor based on the predetermined restricting condition, correcting the setting of the target power based on the effected drive restriction, and controlling said internal combustion engine, said electric power-mechanical power input-output module, and said motor to ensure output of the corrected target power from said internal combustion engine and output of a power in a range of the effected drive restriction from said motor.

The subject-matter of claim 5 is therefor not new (Article 33(2) PCT).

- 2.4 The subject-matter of independent claims 8 and 15 is, respectively an automobile and a control method for a power output apparatus. Since these claims comprise the same features as claim 1, they are also not new (see paragraph 2.2 above).
- 2.5 The subject-matter of independent claims 12 and 17 is, respectively, an automobile and a control method for a power output apparatus. Since these claims comprise the same features as claim 5, they are also not new (see paragraph 2.3 above).

3 DEPENDENT CLAIMS

- 3.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 2, 9, 16 and 18 is not new in the sense of Article 33(2) PCT.
- 3.2 The features of dependent claims 2, 9, 16 and 18 (a charge-discharge electric power measurement module that measures a charge-discharge electric power used to charge said accumulator or obtained by discharging said accumulator; and an electric power demand setting module that sets an electric power demand for charging or discharging said accumulator, based on a predetermined charge-discharge condition, wherein said correction module corrects the setting of the target power to cancel a difference between the charge-discharge electric power measured by said charge-discharge electric power measurement module and the electric power demand set by said electric power demand setting module) are also known from D1 (see paragraphs 56 and 64). The subject-matter of claims 2, 9, 16 and 18 is therefor not new (Article 33(2) PCT).

- 3.3 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 3, 6, 7, 10, 13 and 14 does not involve an inventive step in the sense of Article 33(3) PCT.
- 3.4 The features of claims 3 and 10 are that the target power setting module specifies a target torque and a target revolution speed to set the target power, and the correction module varies the specified target revolution speed to correct the target power. However, it is a basic knowledge of the skilled person that mechanical power is a result of multiplication of torque and revolution speed. Therefore, a variation of one of the torque and the revolution speed would be merely one of two straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to achieve a variation of power. Hence, no inventive step is present in the subject-matter of claims 3 and 10 (Article 33(3) PCT).
- 3.5 The features of claims 6 and 13 are that the electric power-mechanical power input-output module comprises:
a three-shaft power input-output assembly that is connected with three shafts, that is, said output shaft of said internal combustion engine, said drive shaft, and a third shaft, and specifies input and output of power from and to one residual shaft among said three shafts, based on powers input and output from and to two shafts among said three shafts; and
a generator that inputs and outputs power from and to said third shaft.
The three shaft power input-output assemblies are generally known in the art (see e.g. D2, figure 1). The use of such assembly is a straightforward option in order to provide a single output by two different power sources. Hence, no inventive step is present in the subject-matter of claims 6 and 13 (Article 33(3) PCT).
- 3.6 The features of claims 7 and 14 are that the electric power-mechanical power input-output module comprises a pair-rotor generator having a first rotor, which is linked with the output shaft of said internal combustion engine, and a second rotor, which is linked with said drive shaft and rotates relative to the first rotor, said pair-rotor generator outputting at least part of the power from said internal combustion engine to said drive shaft through input and output of electric power by electromagnetic interaction between

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/JP2004/008694

the first rotor and the second rotor.

The pair-rotor generators are generally known in the art (see e.g. D2, figure 1). Their use in a power output apparatus comes within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can readily be foreseen. Consequently, the subject-matter of claims 7 and 14 also lacks an inventive step.

- 4 The combination of the features of dependent claim 4 is neither known from, nor rendered obvious by, the available prior art.